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10/644,236	08/20/2003	Randall Kenneth Payne	390086.95401	6053

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EXAMINER	
KIM, CHONG R	

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/644,236	PAYNE, RANDALL KENNETH	
	Examiner	Art Unit	
	Charles Kim	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06/12/20007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment and Arguments

1. Applicant's amendment filed on June12, 2007 has been entered and made of record.

2. In view of Applicant's amendment, the objection to the specification and 112 first paragraph rejections are withdrawn.

3. Applicant's amendments have necessitated the following new grounds of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-7, 9, 12-13, 15-19, 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Feldman et al., U.S. Patent No. 6,463,167 ("Feldman").

Referring to claim 1, Feldman discloses a method of enhancing imagines of combined tissue types, comprising:

a. separating an image of a combined tissue type into multiple types of tissues [col. 6, line 65-col. 7, line 2];

b. applying an image sharpening filter selectively to only one of the types of tissues [col. 7, lines 2-3 and figure 4. Note that the high-pass (image sharpening) filter is applied selectively to only bone]; and

c. producing an output image with at least the type of tissue modified by the image sharpening filter [figure 11. Note that display step outputs the filtered image].

Referring to claim 2, Feldman further discloses that the image sharpening filter is a spatial high-pass filter [figure 4].

Referring to claim 3, Feldman further discloses that the multiple types of tissues include bone and soft tissue [figure 4].

Referring to claim 4, Feldman further discloses that the type of tissue modified by the image sharpening filter is bone [figure 4].

Referring to claim 5, Feldman further discloses that the multiple types of tissues include fat and non-fat tissue [figure 4].

Referring to claim 6, Feldman further discloses that the type of tissue modified by the image sharpening filter is fat [Figure 3 illustrates the high level of edge enhancement for fat. Note that edge enhancement if achieved by an image sharpening filter].

Referring to claim 7, Feldman further discloses accepting from a user a sharpening amount input [col. 9, line 66-col. 10, line 1 and col. 10, lines 48-50] and where the output image is a combination of the type of tissue modified by the image sharpening filter and the type of tissue unmodified by the image sharpening filter [col. 10, lines 57-61 and figure 11].

Referring to claim 9, Feldman further discloses accepting from a user modification input modifying the type of tissue modified by the image sharpening filter [col. 3, lines 7-17].

Referring to claim 12, see the rejection of at least claim 1 above. Feldman further discloses an apparatus for imaging combined tissue types comprising an x-ray source and detector for collecting x-ray attenuation data over a region of a patient to define an image and a computer to perform the method described in claim 1 [col. 6, lines 41-55 and figure 15].

Referring to claim 13, see the rejection of at least claim 2 above.

Referring to claim 15, see the rejection of at least claim 3 above.

Referring to claim 16, see the rejection of at least claim 4 above.

Referring to claim 17, see the rejection of at least claim 5 above.

Referring to claim 18, see the rejection of at least claim 6 above.

Referring to claim 19, see the rejection of at least claim 7 above.

Referring to claim 21, see the rejection of at least claim 9 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 8 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Feldman et al., U.S. Patent No. 6,463,167 ("Feldman") and Galperin, U.S. Patent No. 6,941,323 ("Galperin").

Referring to claim 8, Feldman does not explicitly disclose that the sharpening amount is received from a virtual control displayed on a screen showing the output image and wherein the

modification of the type of tissue modified by the image sharpening filter is performed substantially in real-time. However, this feature was exceedingly well known in the art. For example, Galperin disclose receiving sharpening filtering parameters from a user using a virtual control displayed on a screen (figures 6-7) showing the output image and wherein the modification by the image sharpening filter is performed substantially in real-time [col. 11, lines 11-41].

Feldman and Galperin are combinable because they are both concerned with performing image sharpening on medical images. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Feldman to include the teachings of Galperin. The reason for doing so would have been to enhance the user friendliness of the adaptive image filtering system by facilitating the user input commands. Therefore, it would have been obvious to combine Feldman with Galperin to obtain the invention as specified in claim 8.

Referring to claim 20, see the rejection of at least claim 8 above.

6. Claims 10, 11, 22, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Feldman et al., U.S. Patent No. 6,463,167 ("Feldman") and Applicant's admitted prior art ("Admission").

Referring to claims 10 and 22, Feldman does not explicitly disclose that the modification input is received by implementing a painting cursor for manipulating a mask superimposed on the output image. However, Admissions discloses a paintbrush tool used to paint additional masked areas onto the output image [Applicant's specification, paragraph 19. Note Applicant's

admission of using the paintbrush tool to paint the mask per standard computer graphics techniques].

Feldman and Admission are combinable because they are both concerned with selectively filtering medical images. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Feldman in view of Admission's teachings. The reason for doing so would have been to enhance the user interface capabilities of the adaptive image filtering system by providing a convenient means for selecting an area. Therefore, it would have been obvious to combine Feldman with Admission to obtain the invention as specified in claims 10 and 22.

Referring to claim 11, Feldman further discloses that the multiple types of tissues are determined by attenuation of x-rays [col. 10, line 62-col. 11, line 4], but does not explicitly disclose a multiple energy x-ray device. However, this feature was exceedingly well known in the art. For example, Admission discloses a multiple energy x-ray device [paragraph 13. Note Applicant's admission of the commercially available x-ray densitometer 10].

Feldman and Admission are combinable because they are both concerned with selectively filtering medical images. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Feldman in view of Admission's teachings. The reason for doing so would have been to enhance the flexibility of the x-ray imaging system by providing the capability of imaging patients at multiple energies. Therefore, it would have been obvious to combine Feldman with Admission to obtain the invention as specified in claim 11.

Referring to claim 23, see the rejection of at least claim 11 above.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Feldman et al., U.S. Patent No. 6,463,167 ("Feldman") and Raymond et al., U.S. Patent No. 6,790,688 ("Raymond").

Referring to claim 14, Feldman does not explicitly disclose that the spatial high-pass filter is implemented by subtracting a spatial low-pass filtered image from the output image. However, this feature was exceedingly well known in the art. For example, Raymond discloses a spatial high-pass filter that is implemented by subtracting a spatial low-pass filtered image from the output image [col. 5, lines 19-22].

Feldman and Raymond are combinable because they are both concerned with adaptive filtering techniques. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Feldman in view of Raymond's teachings. The reason for doing so would have been to enhance the flexibility of the high-pass filtering process by providing the option of using either a true high-pass filter or the subtraction method described above. Therefore, it would have been obvious to combine Feldman with Raymond to obtain the invention as specified in claim 14.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 571-272-7421. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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August 29, 2007